



Implementation of Teaching Factory to Improve Student Competence and Innovation at State Vocational High School 4 Lhokseumawe

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Abstract: This research is a qualitative study aimed at understanding the role of human resource aspects, partnership aspects, and product aspects in supporting teaching factory learning in the expertise competency of light vehicle engineering at SMK Negeri 4 Lhokseumawe. The research was conducted at SMK Negeri 4 Lhokseumawe, Lhokseumawe Regency, Aceh Province. The data sources were obtained from primary and secondary sources. The data collection methods included interviews with several students and teachers, followed by direct observation at SMK Negeri 4 Lhokseumawe to examine the application of the teaching factory learning model. Documentation of each activity was also conducted. The data collection instruments consisted of questionnaires that were distributed to students and teachers. The research results regarding the human resource aspect showed that the highest frequency value was 17 individuals in the good category, with a percentage of 65.38%. For the partnership aspect, the highest frequency value was 12 individuals in the very good category, with a percentage of 85.71%. Lastly, for the product aspect, the highest frequency value was 7 individuals in the very good category, with a percentage of 100%. Based on these findings, it can be concluded that the human resource aspect, partnership aspect, and product aspect play a very good role in the implementation of the teaching factory in the light vehicle engineering expertise competency at SMK Negeri 4 Lhokseumawe.

Keywords: Teachin factory, student competence, vocational school.

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INTRODUCTION

The implementation of secondary education, especially vocational education in Indonesia, has been regulated in laws and regulations, namely Law Number 20 of 2003. Vocational education is implemented in two forms of education, namely formal education such as Vocational High Schools (SMK) and non-formal education such as vocational training institutions (Wilda & Sunoko, 2020). The vision of SMK is quality, superior, evenly

distributed, skilled, character-based and competitive in employment (Indra & Novika, 2022).

In its implementation, SMK connects and trains students to be able to enter the business world and the industrial world, either as workers or as entrepreneurs so that they are able to maintain their existence (Wahyuni et al., 2021). Efforts made to be able to produce quality and high-quality graduates, the government through the Ministry of National Education has established a link and match policy which aims to minimize the discontinuity of knowledge and experience gained in school with conditions and needs in industry (Leman et al., 2023). The disconnect between schools and the industrial world results in students or graduates being unable to understand problems or conditions in the industrial world and being less flexible in playing their roles in the industrial world. As a result, the industrial world considers many vocational high school graduates to be unprepared to face the world of work (Maulina & Yoenanto, 2022).

The unpreparedness of vocational high school graduates in facing the challenges of the world of work should be minimized by schools (Fatwa et al., 2023). Therefore, vocational education institutions, especially vocational high schools, equip their students with knowledge and skills (Lestari, 2021). In addition to these two things, vocational high schools also teach attitudinal values in every learning process to improve the soft skills possessed by students. The learning taught in vocational high schools includes practical knowledge and practical skills that are aligned with progress in the world of work and industry. This learning is considered to be able to meet the demands of the link and match imposed by the government. The link and match policy set by the national education department is realized by implementing the Industrial Work Practice (Prakerin) program and the teaching factory learning model in vocational schools (Maulina & Yoenanto, 2022).

Both of these learning models have the same orientation, namely integrating industry-based learning in the teaching and learning process (Ramdhani, 2024). Prakerin is carried out by sending students to study in industry, while the teaching factory is carried out by bringing an industrial climate to schools such as establishing a production unit workshop in schools as a place of learning for students. The implementation of the teaching factory is explained in the roadmap for the implementation of the teaching factory in 2016 (Directorate of PSMK: 2016), the teaching factory learning model is designed based on production or services by adopting and adapting quality standards and industrial work procedures, will provide contingency competency learning experiences, especially soft skills such as disciplined work ethic, honesty, responsibility, creativity-innovation, entrepreneurial character, cooperation, intelligent competence (Fattah et al., 2021).

Teaching Factory is a form of learning that is applied based on work or also called Work Based Learning (WBL) which is applied in secondary schools. Work-based learning is a modern way to create university-level learning in the workplace (Suranto et al., 2023). Teaching Factory is considered capable of creating students and graduates who have high competence and are able to understand the problems and conditions that occur in the industrial world in a complex way because learning activities in schools have been combined with activities in industry so that the competency gap in both fields can be bridged. SMK Negeri 4 Lhokseumawe is one of the schools that has implemented teaching factory learning, especially in student competencies through the application of the new teaching factory for Light Vehicle Engineering expertise (Widodo, 2022). The implementation of teaching factory learning requires careful preparation, because this learning studies the production process and also the application of industrial culture (Pradana et al., 2016). Teaching factory learning activities will be able to run successfully and successfully if the process is carried out properly as per DU/DI standards. Based on the background above, this study examines "Strategies for improving student competency through the application of new teaching factory in the Light Vehicle Engineering expertise competency of SMK Negeri 4 Lhokseumawe.

METHODS

This study uses the Descriptive Qualitative Analysis method with the aim of determining the implementation of teaching factory learning to improve student competence and innovation at the vocational high school SMK Negeri 4 Lhokseumawe. This research was conducted at SMK Negeri 4 Lhokseumawe, Aceh Province, Lhokseumawe Regency. This research was conducted in May 2024 until completion. There are two data collection techniques in this study, the first is primary data, data collection obtained directly from respondents (research objects) to obtain facts related to the problem being studied.

In this case, the data is obtained in the following ways observation, interview and documentation. Observation is a technique for collecting information by observing directly or carefully in the field or research location. Researchers must visit the research location to see for themselves various aspects or situations in the field in order to obtain the data needed for the research. Interview is a step in the study to collect information by asking the informant directly. In this study, interviews were conducted using an open method, where the informant was aware of the presence of the interviewer as a researcher who wanted to conduct an interview at the research location. According to Bugin (2007:124), the documentation method is one way to collect information in social research. In this study, the researcher recorded in writing about how the Occupational Safety and Health management system was implemented in the Motorcycle Engineering Workshop at SMK Negeri 4 Lhokseumawe.

Secondary data refers to information collected from various sources such as books, references, and documents that are relevant to the research topic. This data is used as support in the data analysis process. This study uses a qualitative data analysis method, which involves deconstructing and interpreting data obtained from ongoing interactions with field informants. The main objective of this study is to investigate how the Occupational Safety and Health Management System is implemented in the Motorcycle Engineering Workshop at SMK Negeri 4 Lhokseumawe.

RESULTS

The results of this study were obtained based on the results of observations, interviews and questionnaires. The questionnaire was used to determine the Implementation of Teaching Factory to Improve Student Competence and Innovation at Vocational High School SMK Negeri 4 Lhokseumawe. Observations and interviews were conducted with teachers and staff at the school. The questionnaire used consisted of 57 questions divided into four aspects, namely: human resources aspect, partnership aspect, infrastructure aspect, and product aspect. The following is an explanation of each aspect:

Human Resources Aspect

Data on human resource aspects are described based on a questionnaire containing 23 items with 20 respondents. Identification of human resource aspects can be seen in the table.

Table 1. Teaching Factory Data Distribution on HR Aspects

NO	Interval	Category	Frequency	Percentage (%)
1	$X > 74,75$	Very Good	6	23,08
2	$74,7 > X > 57,50$	Good	17	65,38
3	$57,5 > X > 40,25$	Medium	0	0,00
4	$X < 40,25$	Bad	0	0
Total			23	100

Partnership Aspects

Information on the Implementation of Teaching Factory Learning in the Light Vehicle Engineering Expertise Competency of SMK Negeri 4 Lhokseumawe in the Partnership aspect was collected through a questionnaire consisting of 14 statements divided into 2 indicators, namely the alignment of partnerships with educational programs and resource sharing.

Table 2. Teaching factory Data Distribution on Partnership Aspect

NO	Interval	Category	Frequency	Percentage (%)
1	$X > 45,50$	Very Good	12	85,71
2	$45,50 > X > 35$	Good	2	14,29
3	$35 > X > 24,5$	Medium	0	0
4	$X < 24,5$	Bad	0	0
Total			14	100

Facilities and infrastructure aspects

Data on the aspects of facilities and infrastructure are described based on a questionnaire containing 11 items with 20 respondents. Identification of the aspects of facilities and infrastructure can be seen in the table.

Table 3. Teaching Factory Data Distribution Infrastructure Aspects

NO	Interval	Category	Frequency	Percentage (%)
1	$X > 35,75$	Very Good	11	100,00
2	$35,7 > X > 27,50$	Good	0	0,00
3	$27,5 > X > 19,25$	Medium	0	0,00
4	$X < 19,25$	Bad	0	0,00
Total			11	100,00

Product Aspect

Data on the aspects of facilities and infrastructure are described based on a questionnaire containing 9 items with 20 respondents. Identification of product aspects can be seen in the table.

Table 4. Teaching factory Data Distribution Product Facilities Aspect

NO	Interval	Category	Frequency	Percentage (%)
1	$X > 23,5$	Very Good	7	100,00
2	$23,5 > X > 17,50$	Good	0	0,00
3	$17,5 > X > 11,5$	Medium	0	0,00
4	$X < 11,5$	Bad	0	0,00
Total			7	100,00

DISCUSSION

Human Resources Aspect

Based on the research data obtained, the human resources aspect has a very good role in the implementation of teaching factory in the Light Vehicle Engineering expertise competency at SMK Negeri 4 Lhokseumawe. This can be seen from the highest frequency value of 17 people with a good category and a percentage of 65.38%. This is due to the understanding, exposure, and teaching of social norms by teachers to students, teachers maintain good communication with all students, and maintain good communication with the industrial world. Communication relationships with the workplace are realized by involving them in curriculum development.

Based on the results of interviews with teachers at SMK Negeri 4 Lhokseumawe, it shows that schools involve the business world in curriculum development to meet industrial quality standards. The teacher explained that the implementation of teaching factory has been set by the industrial world, with needs and competencies adjusted to input from the company. The role of human resources in supporting teaching factory learning in Light Vehicle Engineering Expertise Competencies at SMK Negeri 4 Lhokseumawe is generally very significant. Although the qualifications of human resources are relatively low, the level of competence is considered very high. High levels of human resource competency can cover up the lack of qualifications.

Partnership Aspect

Based on the description of the research results, the partnership aspect has a very good role in the implementation of teaching factory in the Light Vehicle Engineering expertise competency at SMK Negeri 4 Lhokseumawe. This can be seen from the highest frequency value of 12 people with a very good category and a percentage of 85.71%. This is due to the understanding, presentation, and teaching of social norms by teachers to students, teachers maintaining good communication with all students, and maintaining good communication with the industrial world.

According to the interviewed teacher, the teaching factory has been officially made part of the internship program by the Internship Coordinator. This is done to align needs and competencies based on input from the Internship Coordinator. In addition, the school also involves the Internship Coordinator in compiling the curriculum to comply with the established procedures and standards. Another productive teacher in the interview also mentioned a partnership that had been established with a computer company as an example. The partnership includes LCD assembly/installation activities, PC assembly/repair, printer toner refills, and laptop repairs. The conclusion obtained from the discussion is that the Light Vehicle Engineering Competency at SMK Negeri 4 Lhokseumawe has successfully partnered with the Internship Coordinator.

Facilities and Infrastructure Aspects

Based on the description of the research results, the product aspect has a very good role in the implementation of teaching factory in the Light Vehicle Engineering expertise competency at SMK Negeri 4 Lhokseumawe. This can be seen from the highest frequency value of 7 people with a very good category and a percentage of 100%. This is due to the understanding, presentation, and teaching of social norms by teachers to students, teachers maintaining good communication with all students, and maintaining good communication with the industrial world.

The role of the product aspect in supporting teaching factory learning in Light Vehicle Engineering Competency at SMK Negeri 4 Lhokseumawe is generally considered high. Compared to other aspects such as human resources, partnerships, and facilities, the product aspect plays the lowest role in supporting teaching factory learning in Light Vehicle Engineering at SMK Negeri 4 Lhokseumawe.

According to interviews with teachers at the school, the mechanism for implementing the teaching factory in Light Vehicle Engineering at SMK Negeri 4 Lhokseumawe involves students, expert teachers, and teaching factory administrators. Students act as production units that make teaching factory products such as assembling or repairing PCs, LCDs, and laptops. Students are fully responsible for the production process, which is carried out during practice hours with supervision from related teachers. Teachers act as supervisors and control the quality of teaching factory products.

CONCLUSION

Based on the results of the research and discussion, the following conclusions can be drawn. The human resource aspect has a very significant role in the implementation of the teaching factory in the Light Vehicle Engineering Department at SMK Negeri 4 Lhokseumawe, with an importance level reaching 65.38%. The success of teaching factory learning is highly dependent on quality human resources, who have special skills, and are competent. Improving quality, especially in mentoring or teachers, must continue to be carried out so that they can continue to make improvements and innovations in learning in a sustainable manner. The importance of the partnership aspect is very high in the implementation of the teaching factory in the Light Vehicle Engineering Department at SMK Negeri 4 Lhokseumawe with a percentage of 85.71%. Support from the industry greatly influences the success of teaching factory learning. Improving cooperative relationships to obtain this support must continue to be pursued and maintained so that the planning, organizing, implementing, controlling, and evaluating the final results of teaching factory learning can run as expected. The high importance of the product aspect in the implementation of the teaching factory in the Light Vehicle Engineering Department at SMK Negeri 4 Lhokseumawe is 100%. The final output of teaching factory learning can be seen from the products produced. A significant focus of the teaching factory learning process is the feasibility or quality of the product. Efforts to improve and maintain the quality of products that meet business standards will greatly assist in the sustainability of the teaching factory learning process.

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